

Appl. No. 10/064,983
Response dated Apr. 25, 2003
Response to Office Action of Jan. 29, 2003

Listings of Claims

1. (currently amended) A method for forming an OLED device comprising:
forming a device layer on a substrate having an active region defined thereon in which pixels are formed;
patterning the device layer to form pillars along a first direction on the substrate, wherein the pillars comprise a tapered profile, and grooves between the pillars, the pillars extend outside an the active electrode region to prevent electrical shorting;
coating the substrate with a solution comprising an organic functional material dissolved in a solvent, the pillars being are inert to the solvent;
removing the solvent to form an organic functional layer; and
depositing a conductive layer in the electrode region on the substrate, wherein the tapered profile of the pillars separate the conductive layer into first and second distinct portions.
2. (original) The method of claim 1 wherein a distance D is provided between the edge of the active region and ends of the grooves.
3. (original) The method of claim 2 wherein D is at least 300 μ m.
4. (original) The method of claim 2 further comprises mounting a cap on the substrate to hermetically seal the OLED device.
5. (original) The method of claim 4 wherein the substrate comprises a flexible substrate.
6. (original) The method of claim 5 wherein the substrate comprises electrodes in a second direction on a surface thereof.
7. (original) The method of claim 6 wherein the functional organic material comprises a conjugated polymer dissolved in a solvent.

Appl. No. 10/064,983
Response dated Apr. 25, 2003
Response to Office Action of Jan. 29, 2003

8. (original) The method of claim 1 wherein the device layer comprises a photosensitive device layer, the photosensitive layer is patterned by exposing and developing the photosensitive device layer.
9. (original) The method of claim 8 wherein the photosensitive layer comprises a positive photosensitive layer, wherein exposed portions of the photosensitive layer are removed during developing.
10. (original) The method of claim 9 wherein exposing comprises successively exposing the photosensitive layer with electrons or charged particles having different energies which have different penetration depths to form pillars with the tapered profile during developing.
11. (original) The method of claim 8 comprises curing the pillars to render the pillars inert against the solvent.
12. (currently amended) A method for forming an OLED device comprising:
forming a device layer on a substrate having an active region defined thereon in which pixels are formed;
 patterning the device layer to form pillars along a first direction on the substrate, wherein the pillars comprise a tapered profile, and grooves between the pillars, the pillars extend outside the active region to edges of the substrate to prevent electrical shorting;
 coating the substrate with a solution comprising an organic functional material dissolved in a solvent, the pillars being are inert to the solvent;
 removing the solvent to form an organic functional layer; and
 depositing a conductive layer on the substrate, wherein the tapered profile of the pillars separate the conductive layer into first and second distinct portions.
13. (original) The method of claim 12 further comprises mounting a cap on the substrate to hermetically seal the OLED device.

Appl. No. 10/064,983
Response dated Apr. 25, 2003
Response to Office Action of Jan. 29, 2003

14. (original) The method of claim 12 wherein the substrate comprises a flexible substrate.
15. (original) The method of claim 12 wherein the substrate comprises electrodes in a second direction on a surface thereof.
16. (original) The method of claim 15 wherein the functional organic material comprises a conjugated polymer dissolved in a solvent.
17. (original) The method of claim 16 wherein the device layer comprises a photosensitive device layer, the photosensitive layer is patterned by exposing and developing the photosensitive device layer.
18. (original) The method of claim 17 wherein the photosensitive layer comprises a positive photosensitive layer, wherein exposed portions of the photosensitive layer are removed during developing.
19. (original) The method of claim 17 wherein exposing comprises successively exposing the photosensitive layer with electrons or charged particles having different energies which have different penetration depths to form pillars with the tapered profile during developing.
20. (original) The method of claim 19 comprises curing the pillars to render the pillars inert against the solvent.
21. (new) A method for forming an OLED device comprising:
forming a device layer on a substrate having an active region defined thereon in which pixels are formed;
patterning the device layer to form pillars along a first direction on the substrate, wherein the pillars comprise a tapered profile and grooves between the pillars, the pillars extend outside the active region to prevent electrical shorting;

Appl. No. 10/064,983
Response dated Apr. 25, 2003
Response to Office Action of Jan. 29, 2003

forming an organic functional material on the substrate; and
depositing a conductive layer in the electrode region on the substrate, wherein the tapered profile of the pillars separate the conductive layer into first and second distinct portions.

22. (new) The method of claim 21 wherein grooves extend outside the active region to the edges of the substrate.

23. (new) The method of claim 22 wherein forming an organic functional material on the substrate comprises coating the substrate a solution comprising the organic functional material dissolved in a solvent and wherein the pillars are inert to the solvent.

at least
24. (new) The method of claim 22 wherein:
the device layer comprises a photosensitive material; and
the device layer after the pillars are formed is cured to render the pillars inert to the solvent.

25. (new) The method of claim 21 wherein forming an organic functional material on the substrate comprises coating the substrate a solution comprising the organic functional material dissolved in a solvent and wherein the pillars are inert to the solvent.

26. (new) The method of claim 25 wherein:
the device layer comprises a photosensitive material; and
the device layer after the pillars are formed is cured to render the pillars inert to the solvent.

27. (new) The method of claim 21 wherein:
the device layer comprises a photosensitive material; and
the device layer after the pillars are formed is cured to render the pillars inert to the solvent.

Appl. No. 10/064,983
Response dated Apr. 25, 2003
Response to Office Action of Jan. 29, 2003

28. (new) An OLED device comprising:
a substrate having an active region defined thereon, the active region comprises pixels; and
pillars along a first direction on a substrate, wherein the pillars comprise a tapered profile and grooves between the pillars, the pillars extend outside an active region of the substrate to prevent electrical shorting.
29. (new) The OLED device of claim 28 wherein:
the pixels comprise an organic functional layer formed by depositing a solution having organic function material dissolved in a solvent; and
the pillars are inert to the solvent.
30. (new) The OLED device of claim 29 wherein the pillars comprises a photosensitive material, the pillars are cured to render the pillars inert to the solvent.
31. (new) The OLED device of claim 29 wherein the pillars extend outside the active region to the edges of the substrate.
32. (new) The OLED device of claim 28 wherein the pillars comprises a photosensitive material, the pillars are cured to render the pillars inert to the solvent.
33. (new) The OLED device of claim 32 wherein the pillars extend outside the active region to the edges of the substrate.
34. (new) The OLED device of claim 28 wherein the pillars extend outside the active region to the edges of the substrate.
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